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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,975	10/20/2004	Guido Odilon Maurits D'Hoogh	BE 020009	9126

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EXAMINER

RU, POWEN

ART UNIT PAPER NUMBER

2615

DATE MAILED: 11/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/511,975	D'HOOGH, GUIDO ODILON MAURITS	
	Examiner	Art Unit	
	Power Ru	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 15-16 is/are rejected.
- 7) ☒ Claim(s) 13 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 October 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This is the second office action based on the amendment filed on 10/18/2006.

Claims 1-16 are currently pending and have been considered below.

Specification

1. The disclosure is objected to because of the following informalities:
 - Missing content headings, e.g., "BACKGROUND OF THE INVENTION", "SUMMARY OF THE INVENTION", "BRIEF DESCRIPTION OF THE DRAWINGS", "DETAILED DESCRIPTION", etc.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 15 recites the limitation "the suspension device" in line
4. There is insufficient antecedent basis for this limitation in the claim. The examiner considers that the claim depends on Claim 14 where the limitation is recited and further includes the blade springs to provide a cantilevered support.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5, 7-12, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Azima et al. (6,332,029).

Claim 1: Azima discloses an electromagnetic driving unit (transducer 9, col 31 lines 34–64, Fig. 5a and 11a) for a loudspeaker assembly (e.g., loudspeaker 81, col 27 lines 42-61, Fig. 5a), comprising:

a magnet part (magnet assembly including magnets 15 and poles 14, Fig. 11a),
and

a coil part (voice coil assembly including coil 13 and coil former 18, col 31 lines 39-41) that is configured to be suspended adjacent the magnet part and translatable along a translation axis with respect to the magnet part (see Fig. 11a),

the magnet part including:

two permanent magnets (magnets 15) ,

an intermediate magnetic pole element (disk-like pole 14, col 31 line 44) that is sandwiched between the permanent magnets when viewed along the translation axis of the coil part (see Fig. 11a), and includes a pole face (periphery, col 31 line 45) that is magnetically directed towards an inner face of the coil part (close to the interior of each coil former, col 31 line 45), and

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two external magnetic pole elements (outer pole pieces 14 with flange 162, col 31 lines 46-47 and col 32 line 3),

wherein:

the permanent magnets and the intermediate magnetic pole element are sandwiched between the external magnetic pole elements (see Fig. 11a),

the external magnetic pole elements include pole faces (face of the flange 162) that are magnetically directed towards an outer face of the coil part (surround the coil 13, col 31 line 47, see Fig. 11a, near 162).

Claim 2: Azima discloses a driving unit as in Claim 1; and further discloses that the coil part is situated between the two external magnetic pole elements (the flanges 162 of the outer poles 14 surround the coil 13, see Fig. 11a).

Claim 3: Azima discloses a driving unit as in Claim 1; and further discloses that the coil part includes a cylindrical coil (coil 13, col 31 line 39, Fig. 11a; the cylindrical shape has been disclosed earlier in col 31 line 9) having a coil axis that extends parallel to the translation axis of the coil part (see Fig. 11a).

Claim 4: Azima discloses a driving unit as in Claim 1; and further discloses that the two permanent magnets of the magnet part are magnetized in directions parallel to the translation axis of the coil part (i.e., they are magnetized in direction perpendicular to the pole plate, see Fig. 11a), the magnetization direction of the one magnet being opposed to the magnetization of the other magnet (i.e., "push/pull drivers", col 31 line 35, means that the magnet assembly has opposed pair of magnets 15, as disclosed

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early in col 31 line 23 for another embodiment; the magnetization is shown as in Fig. 10).

Claim 6: Azima discloses an electromagnetic driving unit as in Claim 1; and further discloses that the pole faces of the external magnetic pole elements are formed by edge portions (flange 162, col 31 line 46) inclining towards the coil part (see Fig. 11a).

Claim 9: Azima discloses a loudspeaker assembly (loudspeaker 81, col 27 lines 42-61, Fig. 5a) comprising

a frame (1, col 27 line 44, Fig. 1 or the non-labeled portion surrounding the suspension 17 in Fig. 5a),

a diaphragm (panel 2, Fig. 5a and 11a), and

an electromagnetic driving unit that include:

a magnet part (magnet assembly including magnets 15 and poles 14, Fig. 11a),

and

a coil part (voice coil assembly including coil 13 and coil former 18, col 31 lines 39-41) that is configured to be suspended adjacent the magnet part and translatable along a translation axis with respect to the magnet part (see Fig. 11a),

the magnet part including:

two permanent magnets (magnets 15) ,

an intermediate magnetic pole element (disk-like pole 14, col 31 line 44) that is sandwiched between the permanent magnets when viewed along the translation axis of the coil part (see Fig. 11a), and includes a pole face (periphery, col 31 line 45) that is

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magnetically directed towards an inner face of the coil part (close to the interior of each coil former, col 31 line 45), and

two external magnetic pole elements (outer pole pieces 14 with flange 162, col 31 lines 46-47 and col 32 line 3),

wherein:

the permanent magnets and the intermediate magnetic pole element are sandwiched between the external magnetic pole elements (see Fig. 11a),

the external magnetic pole elements include pole faces (face of the flange 162) that are magnetically directed towards an outer face of the coil part (surround the coil 13, col 31 line 47, see Fig. 11a, near 162).

the diaphragm is attached to the coil part of the driving unit (see Fig. 11a, by means of epoxy adhesive bond 16, col 31 lines 42-43, labeled in Fig. 11b) and is flexibly connected to the frame (by means of suspension 17, see Fig. 5a).

Claim 10: Azima discloses a loudspeaker assembly as in Claim 9; and further discloses that the diaphragm is fixed (by means of epoxy adhesive bond 16, col 31 lines 42-43, labeled in Fig. 11b) to the coil part in an area extending between the two external magnetic pole elements (see Fig. 11a).

Claim 11: Azima discloses a loudspeaker assembly as in Claim 9; and further discloses that the diaphragm extends from the coil part in a substantially radial direction with respect to the translation axis of the coil part (see Fig. 11a).

Claim 12: Azima discloses a loudspeaker assembly as in Claim 9; and further discloses an enclosure (8, col 27, lines 53-61, Fig. 5a).

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Claim 16: Azima discloses a driving unit as in Claim 1; and further discloses that the coil part includes a cylindrical coil (coil 13, col 31 line 39, Fig. 11a; the cylindrical shape has been disclosed earlier in col 31 line 9) having a coil axis that coincides to the translation axis of the coil part (see Fig. 11a).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 5 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Azima et al. (6,332,029) in view of Sakamoto et al. (5,594,805)

Claim 5: Azima discloses a driving unit as in Claim 1; but does not specifically disclose that the pole elements are made of a ferromagnetic material.

However, Sakamoto discloses a loudspeaker having a pole element made of a ferromagnetic material (center plate P, Fig. 8, is made of ring iron, col 9 lines 47-49).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to choose any suitable material for the pole element of Azima, including the ferromagnetic material as taught by Sakamoto to implement the required pole element.

Claim 7-8: Azima discloses a driving unit as in Claim 1; but does not specifically disclose that the pole face of the intermediate magnetic pole element either has an increasing radial dimension or is a convex surface.

However, Sakamoto discloses a loudspeaker of which the pole face of the intermediate magnetic pole element (center plate P, col 9 lines 58-60) has a radial dimension which increases from the permanent magnets towards a central portion of the pole face (the center plate outer circumference P1 extends by about 0.5 mm outside of the outer circumference M11 and M12 of the magnets M1 and M2), viewed along the translation axis of the coil part (see Fig. 8);

that the pole face of the intermediate magnetic pole element is a convex surface (col 9 lines 58-60, see Fig. 8).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to apply Sakamoto's pole face structure to Azima's pole element. One would have been motivated to do so in order to efficiently guide the magnetic fluxes towards the voice coil. Sakamoto teaches that, by setting the diameter of the pole element greater than that of the magnets, magnet flux can be generated efficiently from the pole face of the pole element (col 4 lines 62-65) that would be desirable for Azima's driving unit.

Allowable Subject Matter

8. Claims 13-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of

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the base claim and any intervening claims. None of prior art teaches a suspension device at an area between coil part and an outer rim of the diaphragm in combination with all limitations in Claim 1.

9. Claim 15 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. None of prior art teaches a suspension device providing a cantilevered support relative to the flexible connection to suspend the coil adjacent the magnet part in combination with all limitations in Claim 14.

Response to Arguments

10. Applicant's arguments with respect to Claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Sakamoto (5,734,131) discloses a speaker mount structure of vehicle; Lin (6,173,065) discloses a structure of speaker; Proni (5,949,898) discloses a surround for a loudspeaker; Ki et al. (5,848,174) discloses a linear movement speaker system; and Latham-Brown (4,737,992) discloses a compact electroacoustical transducer with spider covering rear basket opening.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Powen Ru whose telephone number is 571-270-1050. The examiner can normally be reached on 7:30am-4:00pm EST/EDT.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on 571-272-7654. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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